

**Electronic Supplementary Information**

**Nanoconfinement effects on the dynamics of ionic liquid-based  
electrolyte probed by multinuclear NMR**

**Andrei Filippov,<sup>a\*</sup> Maiia Rudakova,<sup>a</sup> Victor P. Arkhipov,<sup>b</sup> and Faiz Ullah Shah<sup>a\*</sup>**

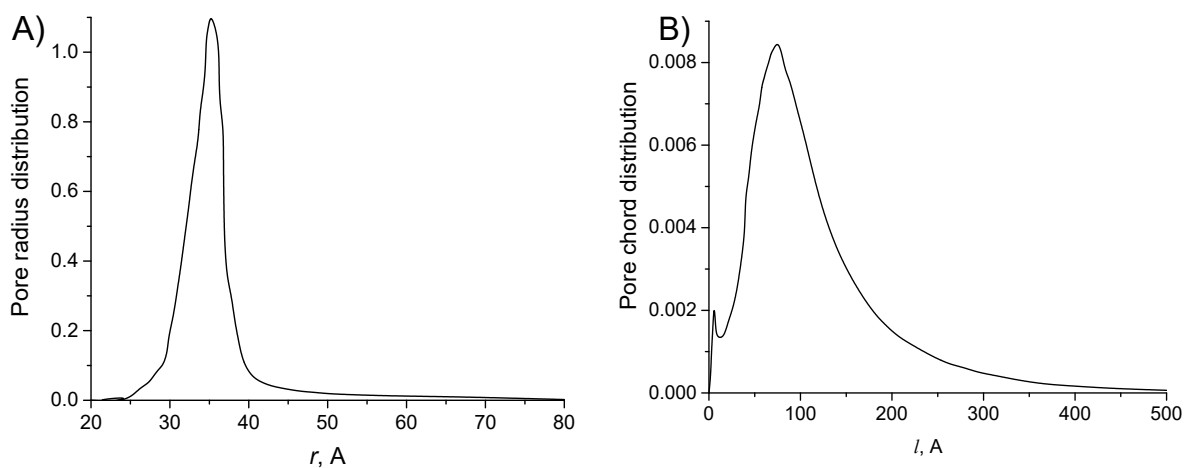
<sup>a</sup>Chemistry of Interfaces, Luleå University of Technology, SE-97187 Luleå, Sweden

<sup>b</sup>Department of Physics, Kazan National Research Technological University, 420015, Kazan,  
Russian Federation

\*Correspondence emails:

[andrei.filippov@ltu.se](mailto:andrei.filippov@ltu.se)

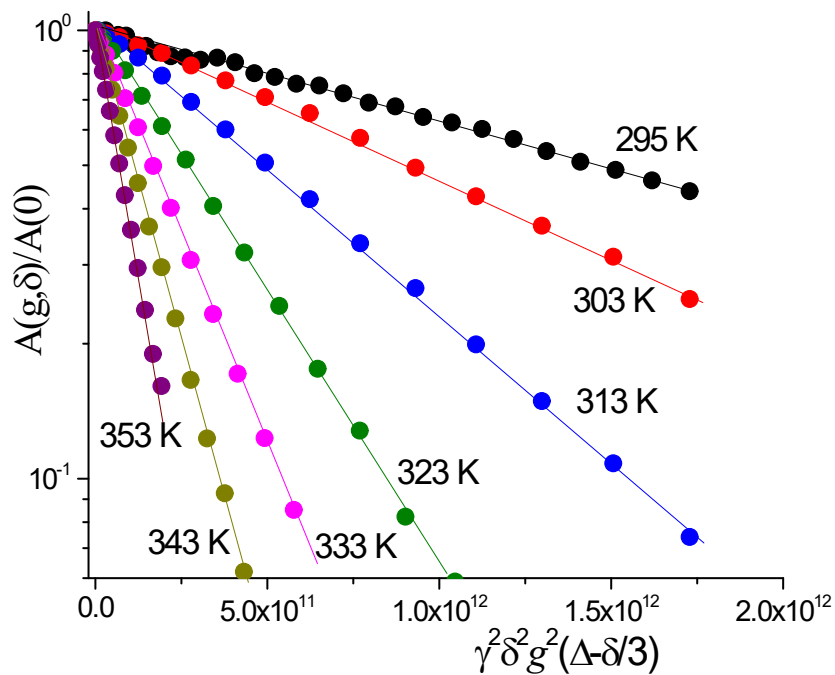
[faiz.ullah@ltu.se](mailto:faiz.ullah@ltu.se)



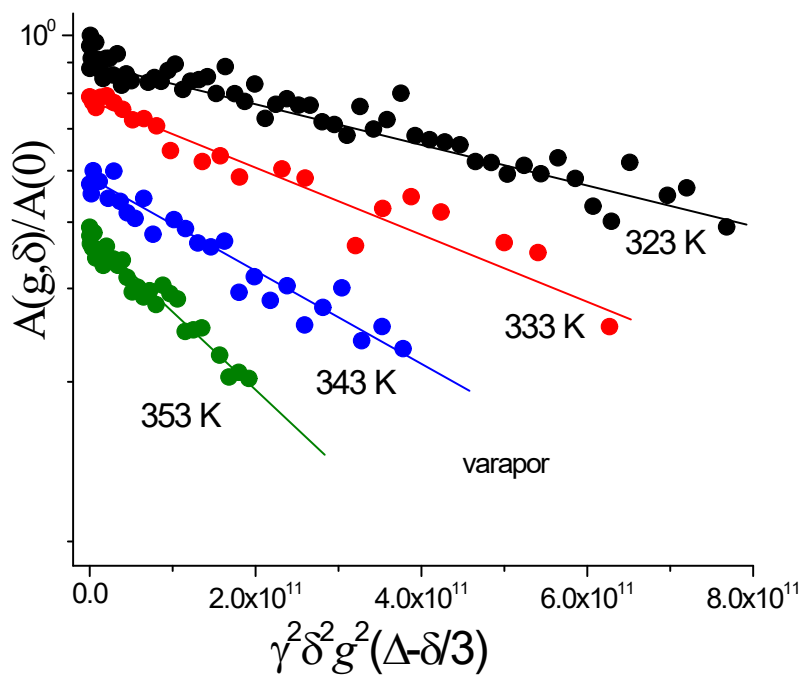
**Figure S1.** Pore radii (A) and Pore chord length (B) distributions of the vycor 7930 obtained by Levitz et al. (P. Levitz, G. Ehret, S. K. Sinha, J. M. Drake, J. Chem. Phys. 1991, 95, 6151).

**Table S1.** Parameters of porous glasses from ([www.porousglass.com](http://www.porousglass.com)). The pore diameter for vycor agrees with data of Cimino et al. (R. Cimino, et al. Colloids and Surfaces A: Physicochem. Eng. Aspects 2013, 437,76).

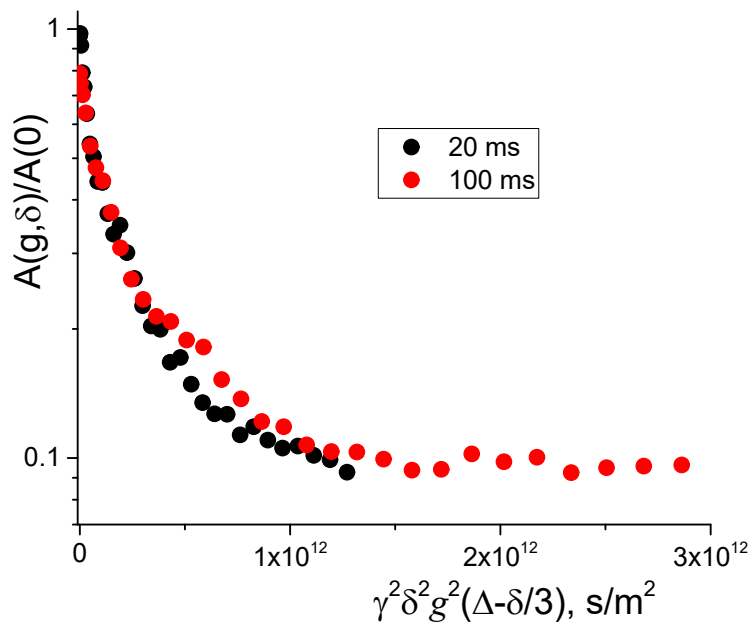
	<u>Vycor® 7930</u> <sup>1</sup>	<u>AGC-40</u> <sup>2</sup>	<u>Varapor100</u> <sup>2</sup>
Surface Area, m <sup>2</sup> /g	250	215	116
Pore Volume, cm <sup>3</sup> /g		0.2	0.3
Porosity, %	28	31	40
Average Pore Diameter, angstrom	40	37	98



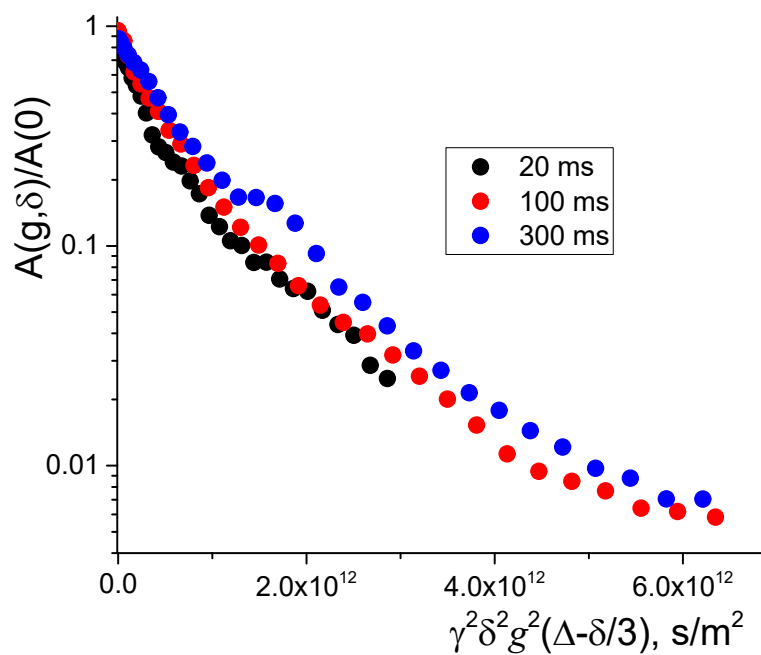
**Figure S2.**  $^7\text{Li}$  NMR PFG diffusion decays for the bulk electrolyte of the study. Diffusion time 20 ms.



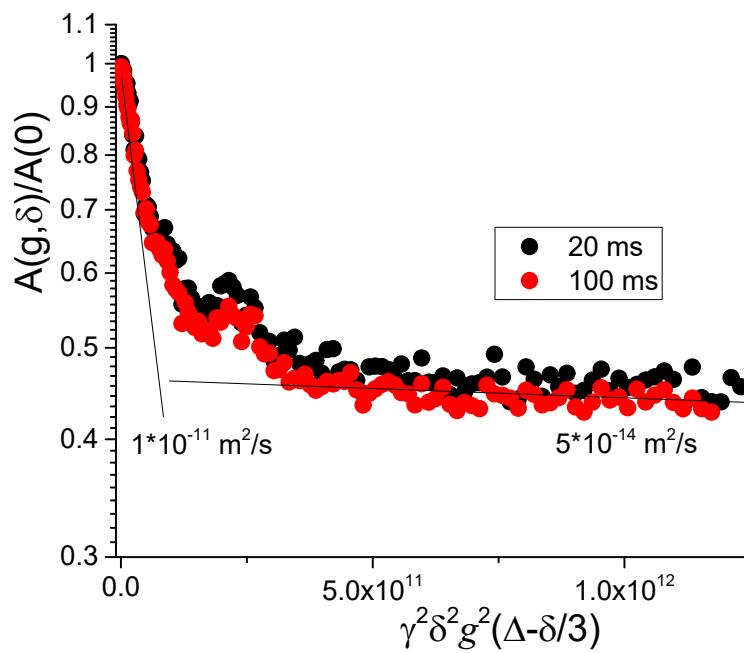
**Figure S3.**  $^7\text{Li}$  NMR PFG diffusion decays for the electrolyte confined in pores of varapor. Diffusion time 20 ms.



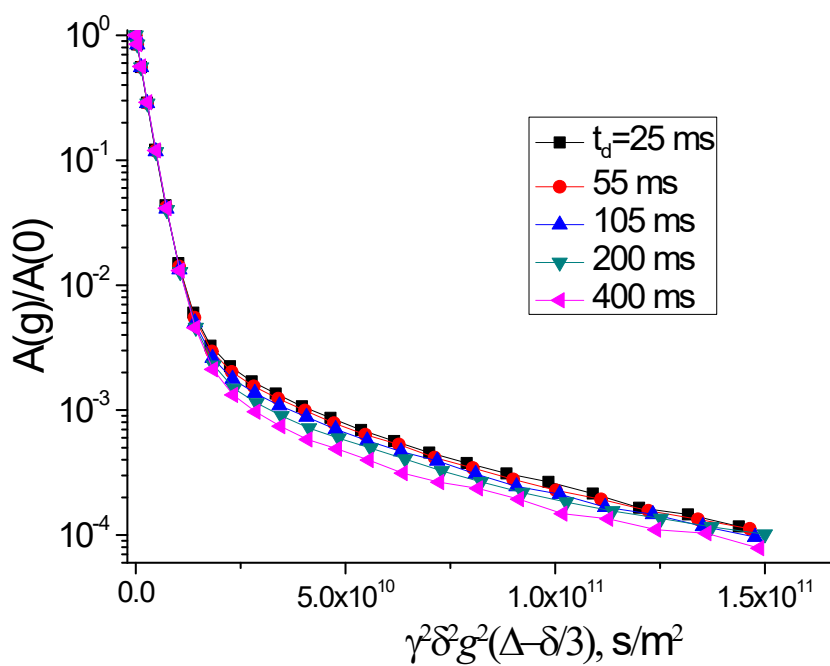
**Figure S4.** Dependence of forms of  $^1\text{H}$  DDs of  $[\text{P}_{4,4,4,4}][\text{MEEA}]$  upon diffusion time for the electrolyte confined in vycor.  $T = 333 \text{ K}$ .



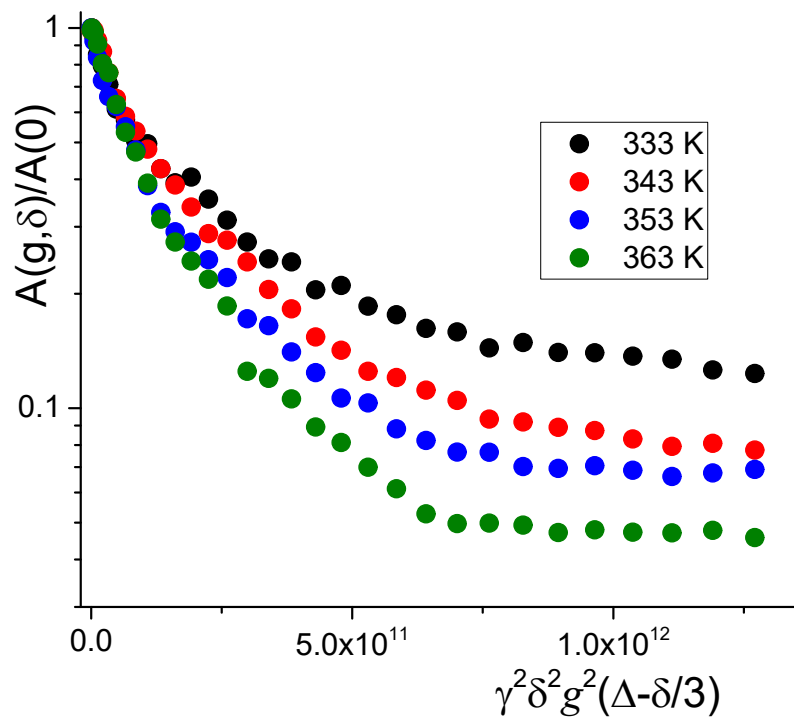
**Figure S5.** Dependence of forms of  $^1\text{H}$  DDs of  $[\text{P}_{4,4,4,4}][\text{MEEA}]$  upon diffusion time for the electrolyte confined in varapor.  $T = 303 \text{ K}$ .



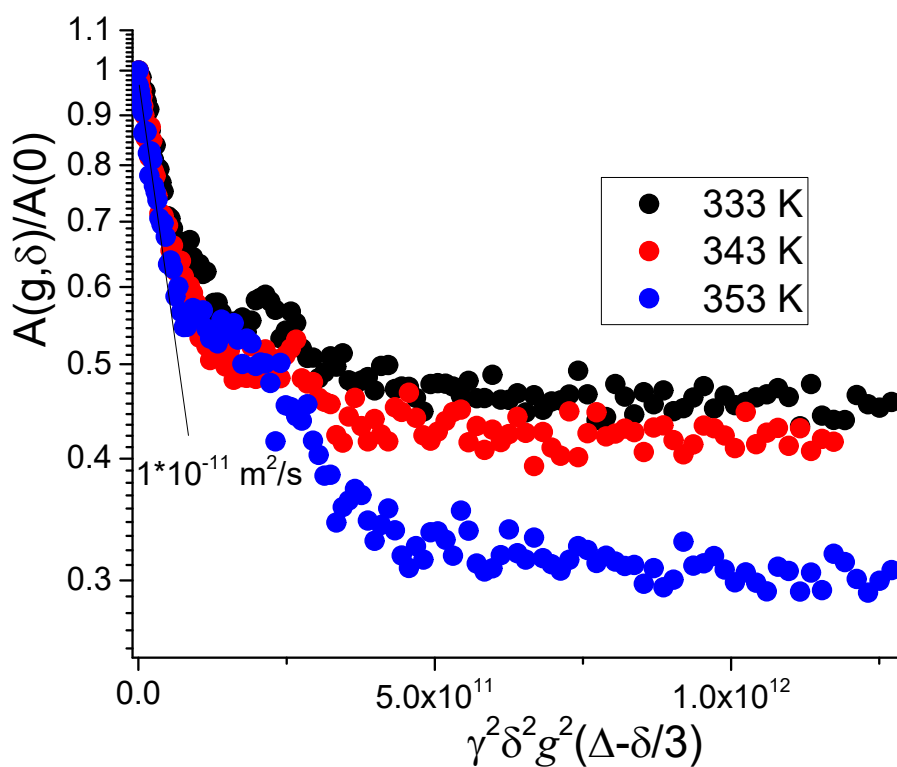
**Fig. S6.** Dependence of forms of  $^1\text{H}$  DDs of  $[\text{P}_{4,4,4,4}][\text{MEEA}]$  upon diffusion time for the electrolyte confined in AGC-40.  $T = 333 \text{ K}$ .



**Figure S7.**  $^1\text{H}$  NMR diffusion decays for  $n$ -decane in pores of vycor upon diffusion time. Diffusion  $T = 293 \text{ K}$



**Figure S8.**  $^1\text{H}$  NMR diffusion decays for the electrolyte in pores of vycor at different temperatures. Diffusion time 20 ms.



**Figure S9.**  $^1\text{H}$  NMR diffusion decays for the electrolyte in pores of AGC-40 at different temperatures. Diffusion time 20 ms.